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L7	363	analog digital parallel order	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	WITH	ON	2005/06/24 07:37
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1 [Sensors: the next wave of innovation](#)

Paul Saffo

 February 1997 **Communications of the ACM**, Volume 40 Issue 2

 Full text available: [pdf \(192.99 KB\)](#) Additional Information: [full citation](#), [citations](#), [index terms](#)


2 [Mixed analog-digital design: Digital background and blind calibration for clock skew error in time-interleaved analog-to-digital converters](#)

David Camarero, Jean-François Naviner, Patrick Loumeau

 September 2004 **Proceedings of the 17th symposium on Integrated circuits and system design**

 Full text available: [pdf \(146.26 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)


This paper deals with the problem of clock skew errors in time-interleaved analog-to-digital converters. Deterministic sample-time errors between time-interleaved channels generate nonlinear distortion and degrade SFDR. We propose a fully digital calibration method that uses, on the one hand, adaptive FIR filters to reconstruct a correctly sampled signal and, on the other hand, a new blind clock skew detection algorithm that guides the adaptive filters. This calibration method applies to any num ...

Keywords: adaptive filters, clock skew, digital calibration, parallel ADC, sample-time errors, time-interleaved

3 [Closing the gap between analog and digital](#)

Khaled Saab, Naim Ben Hamida, Bozena Kaminska

 June 2000 **Proceedings of the 37th conference on Design automation**

 Full text available: [pdf \(94.67 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)


This paper presents a highly effective method for parallel hard fault simulation and test specification development. The proposed method formulates the fault simulation problem as a problem of estimating the fault value based on the distance between the output parameter distribution of the fault-free and the faulty circuit. We demonstrate the effectiveness and practicality of our proposed method by showing results on different designs. This approach extended by parametric fault test ...

Keywords: fault modeling, fault simulation, hard faults, test vector generation

4 A hardware/software co-design flow and IP library based on simulink

L. M. Reyneri, F. Cucinotta, A. Serra, L. Lavagno

June 2001 **Proceedings of the 38th conference on Design automation**

Full text available:  [pdf\(119.94 KB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

This paper describes a design flow for data-dominated embedded systems. We use The Mathworks' Simulink\trademark environment for functional specification and algorithmic analysis. We developed a library of Simulink blocks, each parameterized by design choices such as implementation (software, analog or digital hardware, \ldots) and numerical accuracy (resolution, S/N ratio). Each block is equipped with empirical models for cost (code size, chip area) and performance (timing, energy), based ...

5 Power optimization using divide-and-conquer techniques for minimization of the number of operations

Inki Hong, Miodrag Potkonjak, Ramesh Karri

October 1999 **ACM Transactions on Design Automation of Electronic Systems (TODAES)**, Volume 4 Issue 4

Full text available:  [pdf\(278.45 KB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

We introduce an approach for power optimization using a set of compilation and architectural techniques. The key technical innovation is a novel divide-and-conquer compilation technique to minimize the number of operations for general computations. Our technique optimizes not only a significantly wider set of computations than the previously published techniques, but also outperforms (or performs at least as well as other techniques) on all examples. Along the architectural dimension, we in ...

Keywords: code generation, transformations

6 Novel techniques in high-level synthesis: Toward efficient static analysis of finite-precision effects in DSP applications via affine arithmetic modeling

Claire Fang Fang, Rob A. Rutenbar, Markus Püschel, Tsuhan Chen

June 2003 **Proceedings of the 40th conference on Design automation**

Full text available:  [pdf\(146.17 KB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

We introduce a static error analysis technique, based on smart interval methods from *affine arithmetic*, to help designers translate DSP codes from full-precision floating-point to smaller finite-precision formats. The technique gives results for numerical error estimation comparable to detailed simulation, but achieves speedups of three orders of magnitude by avoiding actual bit-level simulation. We show results for experiments mapping common DSP transform algorithms to implementations us ...

Keywords: Static error analysis, affine arithmetic, custom floating-point, embedded hardware, probabilistic error bound

7 A Design of Analog C-Matrix Circuits used for Signal/Data Processing

Takayuki Sugawara, Yoshikazu Miyanaaga, Norinobu Yoshida

January 2002 **Proceedings of the 2002 conference on Asia South Pacific design automation/VLSI Design**

Full text available:  [pdf\(229.30 KB\)](#)

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Various calculation of matrices and vectors has been used in many digital signal processing systems. Although the calculation simply repeats multiplication and addition, the reiteration processing are usually heavy. Therefore, in order to calculate them with high speed, it is necessary to apply parallel processing. Although there is another issue that a circuit area becomes large in the case of digital LSI, a proposal analog circuit can realize multiplication and addition simultaneously with the ...

Keywords: Analog Circuit, Signal Processing

8 The state of digital computer technology in Europe

Nelson M. Blachman

June 1961 **Communications of the ACM**, Volume 4 Issue 6

Full text available: pdf(2.16 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

This report indicates the level of computer development and application in each of the thirty countries of Europe, most of which were recently visited by the author

9 TAM Optimization for Mixed-Signal SOC's using Analog Test Wrappers

Anuja Sehgal, Sule Ozev, Krishnendu Chakrabarty

November 2003 **Proceedings of the 2003 IEEE/ACM international conference on Computer-aided design**

Full text available: pdf(167.79 KB)

Additional Information: [full citation](#), [abstract](#), [citations](#), [index terms](#)

We present a new approach for TAM optimization and testscheduling in the modular testing of mixed-signal SOC's. A testplanning approach for digital SOC's is extended to handle analogcores in a plug-and-play fashion. A test wrapper based on anADC/DAC pair and a digital configuration circuit is designed foranalog cores such that these cores can be accessed through digitalTAMs. In this way, there is no dependence on an analog testbus and expensive mixed-signal testers. Experimental results arepresent ...

10 Computer-aided digital autopilot design & analysis: Methodology, implementation and verification

W. V. Albanes, J. B. Meadows

December 1979 **Proceedings of the 11th conference on Winter simulation - Volume 1**

Full text available: pdf(663.81 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

This paper details the design methodology for a missile digital autopilot using a digitization approach, and a discrete domain design approach. These two designs rely heavily on computerized system analysis tools in the frequency and time domains. Further, three complex frequency planes are available to the designer, therefore, relative merits of each will be discussed. This paper will also detail the implementation of the autopilot on the missile microcomputer, a six degree of f ...

11 Analog design: A 0.8 μ m CMOS switched-capacitor video filter

Antonio Petraglia, Jorge Morales Cañive, Mariane Rembold Petraglia

September 2004 **Proceedings of the 17th symposium on Integrated circuits and system design**

Full text available: pdf(370.63 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

The very low sensitivity properties of switched-capacitor filtering structures implemented as a parallel connection of two allpass sections has already been demonstrated theoretically and verified by computer simulation. This paper describes the design of a fifth-order lowpass elliptic filter using this technique, to satisfy specifications commonly used in video


frequency applications. Operating with a sampling frequency of 16 MHz, the IC prototype was implemented in a standard double-poly CMOS ...

Keywords: allpass circuits, analog integrated circuits, filters, switched-capacitor filters, testing

12 Using codesign techniques to support analog functionality

Francis G. Wolff, Michael J. Knieser, Dan J. Weyer, Chris A. Papachristou

March 1999 **Proceedings of the seventh international workshop on Hardware/software codesign**

Full text available:  pdf(433.76 KB) Additional Information: [full citation](#), [references](#), [index terms](#)

Keywords: analog, design methodologies, hardware/software codesign

13 Ultra-low-power analog associative memory core using flash-EEPROM-based programmable capacitors

A. Kramer, R. Canegallo, M. Chinosi, D. Doise, G. Gozzini, P. L. Rolandi, M. Sabatini, P. Zabberoni

April 1995 **Proceedings of the 1995 international symposium on Low power design**

Full text available:  pdf(136.30 KB) Additional Information: [full citation](#), [references](#), [index terms](#)

14 DRAFTS: discretized analog circuit fault simulator

Naveena Nagi, Abhijit Chatterjee, Jacob A. Abraham

July 1993 **Proceedings of the 30th international conference on Design automation**

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15 Experiences in verifying parallel simulation algorithms

John Penix, Dale Martin, Peter Frey, Ramanan Radhakrishnan, Perry Alexander, Philip A. Wilsey


March 1998 **Proceedings of the second workshop on Formal methods in software practice**

Full text available:  pdf(987.99 KB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

16 APL and robotics

A. Martin Euredjian

May 1985 **ACM SIGAPL APL Quote Quad , Proceedings of the international conference on APL: APL and the future**, Volume 15 Issue 4

Full text available:  pdf(1.36 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Program execution speeds on today's general purpose APL running computers do not allow APL to be used as a Robot control language, this execution speed problem will go away with faster and better processors. This paper presents an attempt to make APL work for Robotics with today's technology. The basic concept is quite simple: Leave to APL what it can do in real time and have another computer running a faster language do the rest. This allows for APL program development until the ...

17 ILLIADS: A new fast MOS timing simulator using direct equation-solving approach

Y.-H. Shih, S. M. Kang

June 1991 **Proceedings of the 28th conference on ACM/IEEE design automation**Full text available:  [pdf\(675.72 KB\)](#) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)**18** Optical interconnection systems for digital parallel processors

Alexander A. Sawchuk

November 1986 **Proceedings of 1986 ACM Fall joint computer conference**Full text available:  [pdf\(767.75 KB\)](#) Additional Information: [full citation](#), [references](#), [index terms](#)**19** Transistor placement for noncomplementary digital VLSI cell synthesis

Michael A. Riepe, Kareem A. Sakallah

January 2003 **ACM Transactions on Design Automation of Electronic Systems (TODAES)**, Volume 8 Issue 1Full text available:  [pdf\(2.97 MB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

There is an increasing need in modern VLSI designs for circuits implemented in high-performance logic families such as Cascode Voltage Switch Logic (CVSL), Pass Transistor Logic (PTL), and domino CMOS. Circuits designed in these noncomplementary ratioed logic families can be highly irregular, with complex diffusion sharing and nontrivial routing. Traditional digital cell layout synthesis tools derived from the highly stylized "functional cell" style break down when confronted with such circuit t ...

Keywords: Cell Synthesis, Euler graphs, benchmark circuits, digital circuits, noncomplementary circuits, sequence pair optimization, transistor chaining, transistor placement

**20** The development of ODE methods: a symbiosis between hardware and numerical analysis

C. W. Gear, R. Skeel

October 1987 **Proceedings of the ACM conference on History of scientific and numeric computation**Full text available:  [pdf\(1.11 MB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

The history of the numerical solution of ordinary differential equations is surveyed from its origins three centuries ago up to the early 1970s. The increasing demands for the solution of ODEs, especially for exterior ballistics and celestial mechanics, has been a primary stimulus of and a significant influence on the early development of computers starting with the analog differential analyzers and continuing to the first wired-program digital computers—whose form foreshadowed future ...



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